connected to the plurality of sensors to receive the engine data. This ground data link unit includes an archival data store (Claim 1) that is operative to accumulate and store flight performance data and engine data during at least initial take-off during flight of the aircraft. A wideband spread spectrum transceiver is coupled to the archival data store. The transceiver is operative after the aircraft completes its flight and lands at an airport to download the flight performance data that has been accumulated and stored by the archival data store over a wideband spread spectrum communication signal. The spread spectrum transceiver also receives the engine data and is operative to download the engine data upon initial take-off over a wideband spread spectrum communication signal.

An airport based spread spectrum receiver receives the wideband spread spectrum communication signal from the aircraft upon initial take-off and demodulates the communication signal to obtain the engine data. A ground based server is connected to the airport based spread spectrum receiver for receiving the engine data and further processing the engine data. Upon landing, flight performance data is downloaded.

Thus, it is possible to determine through the subsequent processing of the downloaded engine data after initial take-off if any engine problems could develop in flight. It is also possible to perform data analysis on engine data stored in the archival data store for long term engine analysis after the aircraft lands.

Independent Claim 16 is directed to the ground data link unit having a central processing unit that receives the engine data and processes the engine data to determine engine event problems. This data, including the determination of

engine event problems, is transmitted via the wideband spread spectrum communication signal to the airport based spread spectrum receiver, where the data is demodulated. A ground based server is connected to the airport based spread spectrum receiver and receives the engine data and further processes engine data, such as to determine engine problems.

Method Claims 31 and 36 are independent claims that track closely the two independent system claims.

As noted further in the dependent claims, the wideband spread spectrum communication signal is preferably formed as a direct sequence spread spectrum communication signal that is a signal within the S-band, and particularly, a signal in the range of about 2.4 to about 2.5 GHz. The airport based archival data store can also store data to be uploaded to the aircraft.

Applicants contend that the amended claims are patentable over the cited Schuchman et al., Miller, Jr. et al., and Polivka et al. references.

The present amended claims are clearly distinguishable over the cited references. Schuchman et al. concerns periodic, real time burst transmissions of surveillance data during flight, such that an air traffic controller can monitor the flight of the aircraft during its flight. Schuchman et al. uses a short term buffer. Any storage in the buffer is for a short duration to allow the real time burst transmissions. This type of navigation position data is transmitted at close intervals (on the order of six second intervals) because the air traffic controller requires continuous updating.

In the present invention, on the other hand, any flight performance data is archived over a long term period, which could be many hours, both in flight and even on the

ground. This archival data includes engine data (Claims 1 and 36), which can also be downloaded upon initial take-off. The engine data can also be processed initially within a central processing unit of the ground data link unit (Claims 16 and 31), which is not suggested by the cited prior art. Thus, real time analysis of engine data can also occur upon initial take-off. Thus, Schuchman is opposite to the present invention. Although Miller discloses the storage of flight performance data, such as engine conditions, through a standard and conventional flight data recording system, this data is primarily downloaded using a hard-wired digital data link. In one embodiment, the downloading occurs using an ACARS, low data rate, narrow band channel. There is no wideband spread spectrum communication signal. This is the complete opposite of what the present invention uses, i.e., a wideband spread spectrum communication signal for downloading.

Additionally, Schuchman communication is with a conventional ATN link and discloses a time division multiplexing system using a narrow band/low data rate, real time data communication, as opposed to a wideband spread spectrum communication at high data rates of about 1-11 megabits per second (MBPS). It is well known that spread spectrum is not a form of TDMA. In a TDMA communication system, an interval of transmission time is subdivided into a plurality of time slots in which information is transmitted. In a wideband spread spectrum communication system of the present invention, on the other hand, the energy is spread over the wideband width to mitigate interference and reduce power spectral density. An example is a direct sequence spread spectrum communication signal that is within the S-band, as with the present invention.

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Additionally, the use of a signal in the range of about 2.4 to 2.5 GHz would make the Schuchman et al. downloading of data miles from an airport impractical. Also, the present invention is advantageous because it does not require a site use license from the FCC. The SACOM communications controller (SCC) of Schuchman et al. is a ground component and is not located on board the aircraft as with the ground data link unit of the present invention.

Polivka et al. concerns a system architecture and communication for reducing the size of an aircraft antenna to allow video communications with an aircraft via a satellite communications link. An input video signal is compressed and used to modulate a carrier signal, which is then spread. However, there is no teaching or suggestion in Polivka for the present invention using the archival data store and first and second transceivers and the downloading and uploading of data as in the present invention.

Additionally, Applicants note that the fling date has been corrected to June 25, 1999. The Office Action incorrectly states June 26, 1999 as the filing date.

Applicants contend that this case is now in condition for allowance. If the Examiner has any questions concerning this application or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: **ASSISTANT COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231**, on this 22nd day of December, 1999.

Julii Lalon